

**PRIV.-DOZ. DR.RER.NAT. MÉLANIE HALL**

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Date of birth: 11.09.1980 (France)

**MAIN AREAS OF RESEARCH**

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Sustainable Catalysis – Enzymatic Methodologies for Asymmetric Synthesis – Enzymes in Biotechnology

**EDUCATION**

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- 2016** Habilitation (Priv.-Doz.) | Department of Chemistry, University of Graz, Austria  
*Field: organic chemistry (venia docendi) – related field: molecular biosciences*
- 2007** Ph.D. (*Dr.rer.nat.*) | Department of Chemistry, University of Graz, Austria
- 2004** M.Sc. (*diplôme d'ingénieur*) | École Nationale Supérieure de Chimie de Rennes (ENSCR), France

**ACADEMIC EMPLOYMENT**

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- 2017-** Independent Researcher | Department of Chemistry, University of Graz, Austria
- 2010-2016** University Assistant | Department of Chemistry, University of Graz, Austria
- 2010** Research scientist | School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, USA
- 2008-2010** Postdoctoral associate | School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, USA

**AWARDS**

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- 2016** National Habilitation Award of the Austrian Chemical Society (GÖCH)
- 2013** Anton-Paar Award of Science of the Austrian Chemical Society (GÖCH)

**THIRD-PARTY FUNDING & COLLABORATIONS**

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- 2017-2019** Stand-Alone Project | Austrian Science Funds (FWF)  
*Intramolecular Bio-Tishchenko Reaction*
- 2015-2017** Strategic Project | Austrian Center of Industrial Biotechnology (ACIB)  
*Human Monooxygenases*  
Project partner Prof. Andrea Mattevi, University of Pavia, Italy
- 2015-2016** Mobility Support | Austrian Agency for International Mobility & Cooperation (OeAD GmbH)  
*Asymmetric Bioreduction of  $\alpha,\beta$ -unsaturated S-Compounds*  
Project partner Dr. Fabricio Bisogno, Universidad Nacional de Córdoba, Argentina
- 2013-2016** Chem21 European Project | Innovative Medicines Initiative (IMI)  
*Ene-Reductases for Stereoselective Synthesis*
- 2012-2014** Strategic Project | Austrian Center of Industrial Biotechnology (ACIB)  
 *$\delta$  and  $\gamma$ -Lactamases*

## INVITED LECTURES AND SEMINARS

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- Department of Chemistry & Biomolecular Sciences, University of Ottawa, *to come*, July 18, **2018**, Ottawa, Canada.
- Gordon Research Conference on Biocatalysis, *to come*, July 8-13, **2018**, Biddeford, USA.
- Campus for Biotechnology and Sustainability, TU Munich, October 19, **2017**, Straubing, Germany
- GÖCH 17. Austrian Chemistry Days, September 25-28, **2017**, Salzburg, Austria.
- 8th World Congress on Oxidation Catalysis, September 3-8, **2017**, Krakow, Poland.
- Department of Chemistry, TU Munich, May 12, **2017**, Munich, Germany.
- Organic Chemistry Institute, WWU Münster, March 2, **2017**, Münster, Germany.
- Mini-Symposium on Environmental Biotechnology, Science for Life Laboratory, KTH Royal Institute of Technology, October 26, **2016**, Stockholm, Sweden.
- Annual Research Meeting of the Structural Biology Unit, Department of Biology and Biotechnology, University of Pavia, April 7-8, **2016**, Brallo di Pregola, Italy.
- PhD Course 'Taming Enzymes: Advances in Biocatalytic Processes', November 24-26, **2015**, Cordoba, Argentina.
- XX National Symposium of Organic Chemistry (SINAQO), November 11-14, **2015**, Mar del Plata, Argentina.
- PhD School in Industrial Chemistry and Chemical Engineering, Department of Chemistry, Materials, and Chemical Engineering 'G. Natta', Politecnico di Milano, September 25, **2015**, Milan, Italy.
- Industrial Enzymes Workshop, September 22-23, **2015**, Pavia, Italy.
- GÖCH 16. Austrian Chemistry Days, September 21-24, **2015**, Innsbruck, Austria.
- Department of Chemistry, Université de Montréal, August 25, **2015**, Montreal, Canada.
- Atlanta Flavin Meeting at the Georgia Institute of Technology, June 29, **2015**, Atlanta, USA.
- Active Enzyme Molecule 2014 (AEM), December 17-19, **2014**, Toyama, Japan.
- Graduate School of Agriculture, Kyoto University, December 16, **2014**, Kyoto, Japan.
- Institute of Organic Chemistry, University of Regensburg, October 29, **2014**, Regensburg, Germany.
- Gordon Research Conference on Biocatalysis, July 6-11, **2014**, Smithfield, USA.

### Young Investigator Talk

- 25th Symposium of the CBSO, June 3-6, **2014**, Carry-le-Rouet, France.
- Empa 3rd 1 Day Symposium on Biocatalysis, January 20, **2014**, St Gallen, Switzerland.
- International Conference of Young Chemists (ICYC), April 8-10, **2012**, Amman, Jordan.
- 3rd Annual PhD Workshop on Enzymatic Hydrolysis of Insoluble Substrates, October 25-26, **2011**, Holbæk, Denmark.
- GÖCH 14. Austrian Chemistry Days, September 26-29, **2011**, Linz, Austria.
- 3rd Young Investigator's Workshop, Organic Division of EuCheMS, July 8-9, **2011**, Heraklion, Greece.

Nominated as one of the two Austrian delegates by the Austrian Chemical Society (GÖCH)

## LECTURES

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- European Summit of Industrial Biotechnology (ESIB), November 14-16, **2017**, Graz, Austria
- 13th European Congress on Catalysis (EUROPACAT 2017), August 27-31, **2017**, Florence, Italy.
- 13th International Symposium on Biocatalysis and Biotransformations (Biotrans), July 9-13, **2017**, Budapest, Hungary.
- Second Anatolian Conference on Synthetic Organic Chemistry (ACSOCII), March 21-24, **2016**, Kusadasi, Turkey.
- International Symposium on Activation of Dioxygen and Homogeneous Oxidation Catalysis (ADHOC), June 21-25, **2015**, Madison, USA.
- Chemiedozententagung 2015, March 2-4, **2015**, Regensburg, Germany.
- Green Chemistry for Pharma Conference, September 23-24, **2014**, Graz, Austria.
- 18th International Symposium on Flavins and Flavoproteins, July 27-August 01, **2014**, Cha-Am, Thailand.
- 11th International Symposium on Biocatalysis and Biotransformations (Biotrans), July 21-25, **2013**, Manchester, UK.
- 2nd International Conference on Molecular and Functional Catalysis (ICMFC-2), July 30-31, **2012**, Singapore.
- 4th European Conference on Chemistry for Life Sciences (ECCLS), August 31-September 3, **2011**, Budapest, Hungary.
- 5th International Congress on Biocatalysis (Biocat), August 27-September 2, **2010**, Hamburg, Germany.
- Pacific Rim Summit on Industrial Biotechnology and Bioenergy, November 8-11, **2009**, Honolulu, USA.
- 9th International Symposium on Biocatalysis and Biotransformations (Biotrans), July 5-9, **2009**, Bern, Switzerland.
- 31st Symposium on Biotechnology for Fuels and Chemicals, May 3-7, **2009**, San Francisco, USA.
- 8th International Symposium on Biocatalysis and Biotransformations (Biotrans), July 8-13, **2007**, Oviedo, Spain.

## PUBLICATIONS (Scopus Author ID: **55900277400** | <http://orcid.org/0000-0003-4539-1992>)

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<sup>§</sup> Joint first authors; \* Joint corresponding authors; # Featured on the journal cover.

- 41) G. Tasnádi, W. Jud, M. Hall, K. Baldenius, K. Ditrich, K. Faber, Evaluation of Natural and Synthetic Phosphate Donors for the Improved Enzymatic Synthesis of Phosphate Monoesters, *Adv. Synth. Catal.*, **2018**, *in press*, DOI: 10.1002/adsc.201800306.
- 40) S. Gandomkar, A. Dennig, A. Dordic, L. Hammerer, M. Pickl, T. Haas, M. Hall\*, K. Faber\*, Biocatalytic Oxidative Cascade for the Conversion of Fatty Acids to  $\alpha$ -Ketoacids via Internal H<sub>2</sub>O<sub>2</sub> Recycling, *Angew. Chem. Int. Ed.*, **2018**, *57*, 427-430.
- 39) I. Janicki, P. Kiełbasiński\*, N. G. Turrini, K. Faber, M. Hall\*, Asymmetric Bioreduction of  $\beta$ -Activated Vinylphosphonate Derivatives Using Ene-Reductases<sup>#</sup>, *Adv. Synth. Catal.*, **2017**, *359*, 4190-4196.  
Selected as VIP Paper.

- 38) F. Fiorentini, E. Romero, M. Fraaije, K. Faber, M. Hall\*, A. Mattevi\*, Baeyer-Villiger Monooxygenase FMO5 as Entry Point in Drug Metabolism, *ACS Chem. Biol.*, **2017**, *12*, 2379-2387.  
Selected as a 'Faculty of 1000' article (F1000Prime) of special significance.
- 37) G. Tasnádi, M. Zechner, M. Hall, K. Baldenius, K. Ditrach, K. Faber, Investigation of Acid Phosphatase Variants for the Synthesis of Phosphate Monoesters, *Biotechnol. Bioeng.*, **2017**, *114*, 2187-2195.
- 36) R. C. Cioc, V. Estévez, D. J. van der Niet, C. M. L. Vande Velde, N. G. Turrini, M. Hall, K. Faber, E. Ruijter, R. V. A. Orru, Stereoselective Synthesis of Functionalized Bicyclic Scaffolds by Passerini 3-Center-2-Component Reactions of Cyclic Ketoacids, *Eur. J. Org. Chem.*, **2017**, 1262-1271.
- 35) N. G. Turrini, R. C. Cioc, D. J. van der Niet, E. Ruijter, R. V. A. Orru, M. Hall, K. Faber, Biocatalytic Access to Nonracemic  $\gamma$ -Oxo Esters *via* Stereoselective Reduction Using Ene-Reductases, *Green Chem.*, **2017**, *19*, 511-518.
- 34) N. G. Turrini, E. Eger, T. C. Reiter, K. Faber, M. Hall, Sequential Enzymatic Conversion of  $\alpha$ -Angelica Lactone to  $\gamma$ -Valerolactone *via* Hydride-Independent C=C Bond Isomerization, *ChemSusChem*, **2016**, *9*, 3393-3396.
- 33) M. Fink, S. Trunk, M. Hall, H. Schwab, K. Steiner, Engineering of TM1459 from *Thermotoga maritima* for Increased Oxidative Alkene Cleavage Activity, *Front. Microbiol.*, **2016**, *7*, 1511.
- 32) G. Tasnádi, M. Hall, K. Baldenius, K. Ditrach, K. Faber, Biocatalytic Functionalization of Hydroxyalkyl Acrylates and Phenoxyethanol *via* Phosphorylation, *J. Biotechnol.*, **2016**, *233*, 219-227.
- 31) J. Gross, Z. Prokop, D. Janssen, K. Faber, M. Hall, Regio- and Enantioselective Sequential Dehalogenation of *rac*-1,3-Dibromobutane by Haloalkane Dehalogenase LinB, *ChemBioChem*, **2016**, *17*, 1437-1441.
- 30) A. Dennig, S. Kurakin, M. Kuhn, A. Dordic, M. Hall, Kurt Faber, Enzymatic Oxidative Tandem Decarboxylation of  $\alpha,\omega$ -Dioic Acids to  $\alpha,\omega$ -Dienes, *Eur. J. Org. Chem.*, **2016**, *21*, 3473-3477.
- 29) F. Fiorentini, M. Geier, C. Binda, M. Winkler, K. Faber, M. Hall\*, A. Mattevi\*, Biocatalytic Characterization of Human FMO5: Unearthing Baeyer-Villiger Reactions in Humans, *ACS Chem. Biol.*, **2016**, *11*, 1039-1048.
- 28) G. Tasnádi, M. Lukesch, M. Zechner, W. Jud, M. Hall, K. Ditrach, K. Baldenius, A. F. Hartog, R. Wever, K. Faber, Exploiting Acid Phosphatases in the Synthesis of Phosphorylated Monoalcohols and Diols, *Eur. J. Org. Chem.*, **2016**, 45-50.
- 27) M. Geier, C. Brandner, G. A. Strohmeier, M. Hall, F. S. Hartner, A. Glieder, Engineering *Pichia pastoris* for Improved NADH Regeneration: A Novel Chassis Strain for Whole-Cell Catalysis, *Beilstein J. Org. Chem.*, **2015**, *11*, 1741-1748.
- 26) I. Hajnal, K. Faber, H. Schwab, M. Hall\*, K. Steiner\*, Oxidative Alkene Cleavage Catalysed by Manganese-dependent Cupin TM1459 from *Thermotoga maritima*, *Adv. Synth. Catal.*, **2015**, *357*, 3309-3316.  
Highlighted in *Nat. Prod. Rep.*, **2016**, *33*, 122.
- 25) A. Dennig, M. Kuhn, S. Tassoti, A. Thiessenhusen, S. Gilch, T. Bülter, T. Haas, M. Hall, K. Faber, Oxidative Decarboxylation of Short-Chain Fatty Acids to 1-Alkenes, *Angew. Chem. Int. Ed.*, **2015**, *54*, 8819-8822.  
Selected as VIP Paper | Highlighted in *Synfacts* **2015**, *11*, 0993 and *Nat. Prod. Rep.*, **2015**, *32*, 1364.
- 24) N. G. Turrini, M. Hall, K. Faber, Enzymatic Synthesis of Optically Active Lactones *via* Asymmetric Bioreduction Using Ene-Reductases from the Old Yellow Enzyme Family, *Adv. Synth. Catal.*, **2015**, *357*, 1861-1871.

Selected as VIP Paper | Highlighted in *Nat. Prod. Rep.*, **2015**, *32*, 1364.

- 23) Z. Assaf, E. Eger, Z. Vitnik, W. M. Fabian, D. Ribitsch, G. M. Guebitz, K. Faber, M. Hall, Identification and Application of Enantiocomplementary Lactamases for Vince Lactam Derivatives, *ChemCatChem*, **2014**, *6*, 2517-2521.
- 22) C. Wuensch<sup>§</sup>, H. Lechner<sup>§</sup>, S. M. Glueck, K. Zangger, M. Hall<sup>\*</sup>, K. Faber<sup>\*</sup>, Asymmetric Biocatalytic Cannizzaro-Type reaction, *ChemCatChem*, **2013**, *5*, 1744-1748.
- 21) G. Oberdorfer, A. Binter, S. Wallner, K. Durchschein, M. Hall, K. Faber, P. Macheroux, K. Gruber, The Structure of Glycerol Trinitrate Reductase NerA from *Agrobacterium radiobacter* Reveals the Molecular Reason for Nitro- and Ene-Reductase Activity in OYE Homologues, *ChemBioChem*, **2013**, *14*, 836-845.
- 20) G. Oberdorfer, K. Gruber, K. Faber<sup>\*</sup>, M. Hall<sup>\*</sup>, Stereocontrol Strategies in the Asymmetric Bioreduction of Alkenes, *Synlett*, **2012**, *23*, 1857-1864.
- 19) G. Tasnádi, C. K. Winkler, D. Clay, N. Sultana, W. M. F. Fabian, M. Hall, K. Ditrach, K. Faber, A Substrate-Driven Approach to Determine Reactivities of  $\alpha,\beta$ -Unsaturated Carboxylic Esters Towards Asymmetric Bioreduction, *Chem. Eur. J.*, **2012**, *18*, 10362-10367.
- 18) G. Tasnádi, C. K. Winkler, D. Clay, M. Hall, K. Faber, Reductive Dehalogenation of  $\beta$ -Haloacrylic Ester Derivatives Mediated by Ene-Reductases<sup>#</sup>, *Catal. Sci. Technol.*, **2012**, *2*, 1548-1552.

Selected as a *Catalysis Science & Technology* Hot Article

- 17) P. Bansal, B. J. Vowell, M. Hall, M. J. Realff, J. H. Lee, A. S. Bommarius, Elucidation of Cellulose Accessibility, Hydrolysability and Reactivity as the Major Limitations in the Enzymatic Hydrolysis of Cellulose, *Bioresour. Technol.*, **2012**, *107*, 243-250.
- 16) M. Hall<sup>§</sup>, J. Rubin<sup>§</sup>, S. Behrens, A. S. Bommarius, The Cellulose-Binding Domain of Cellobiohydrolase Cel7A from *Trichoderma reesei* is Also a Thermostabilizing Domain, *J. Biotechnol.*, **2011**, *155*, 370-376.
- 15) C. Stueckler, C. K. Winkler, M. Hall, B. Hauer, M. Bonnekessel, K. Zangger, K. Faber, Stereo-Controlled Asymmetric Bioreduction of  $\alpha,\beta$ -Dehydroamino Acid Derivatives, *Adv. Synth. Catal.*, **2011**, *353*, 1169-1173.
- 14) Y. Yanto, C. K. Winkler, S. Lohr, M. Hall, K. Faber, A. S. Bommarius, Asymmetric Bioreduction of Alkenes Using Ene-Reductases YersER and KYE1, and Effects of Organic Solvents, *Org. Lett.*, **2011**, *13*, 2540-2543.
- 13) K. Tauber, M. Hall, W. Kroutil, W. M. F. Fabian, K. Faber, S. Glueck, A Highly Efficient ADH-Coupled NADH-Recycling System for the Asymmetric Bioreduction of C=C Double Bonds using Enoate Reductases, *Biotechnol. Bioeng.*, **2011**, *108*, 1462-1467.
- 12) M. Hall, P. Bansal, J. H. Lee, M. J. Realff, A. S. Bommarius, Biological Pretreatment of Cellulose: Enhancing Enzymatic Hydrolysis Rate using Cellulose-Binding Domains from Cellulases, *Bioresour. Technol.*, **2011**, *102*, 2910-2915.
- 11) Y. Yanto, H.-H. Yu, M. Hall, A. S. Bommarius, Characterization of Xenobiotic Reductase A (XenA): Study of Active Site Residues, Substrate Spectrum and Stability, *Chem. Commun.*, **2010**, *46*, 8809-8811.
- 10) Y. Yanto, M. Hall, A. S. Bommarius, Nitroreductase from *Salmonella typhimurium*: Characterization and Catalytic Activity, *Org. Biomol. Chem.*, **2010**, *8*, 1826-1832.
- 9) P. Bansal, M. Hall, M. J. Realff, J. H. Lee, A. S. Bommarius, Multivariate Statistical Analysis of X-ray Data from Cellulose: A New Method to Determine Degree of Crystallinity and Predict Hydrolysis Rates, *Bioresour. Technol.*, **2010**, *101*, 4461-4471.

- 8) M. Hall, P. Bansal, J. H. Lee, M. J. Realff, A. S. Bommarius, Cellulose Crystallinity: A Key Predictor of Enzymatic Hydrolysis Rate, *FEBS J.*, **2010**, 277, 1571-1582.

FEBS Journal Top-Cited Paper Award (as one of the top 10 most-cited FEBS Journal papers two years from publication) | Highly cited paper (top 1% of the academic field of Biology & Biochemistry)

- 7) N. J. Mueller, C. Stueckler, M. Hall, P. Macheroux, K. Faber. Epoxidation of Conjugated C=C-Bonds and Sulfur-Oxidation of Thioethers Mediated by NADH:FMN-Dependent Oxidoreductases, *Org. Biomol. Chem.*, **2009**, 7, 1115-1119.

- 6) M. Hall, C. Stueckler, B. Hauer, R. Stuermer, T. Friedrich, M. Breuer, W. Kroutil, K. Faber. Asymmetric Bioreduction of Activated C=C-Bonds using *Zymomonas mobilis* NCR Enoate Reductase and Old Yellow Enzymes OYE 1-3 from Yeasts<sup>#</sup>, *Eur. J. Org. Chem.*, **2008**, 1511-1516.

- 5) M. Hall, C. Stueckler, H. Ehammer, E. Pointner, G. Oberdorfer, K. Gruber, B. Hauer, R. Stuermer, W. Kroutil, P. Macheroux, K. Faber. Asymmetric Bioreduction of C=C Bonds using Enoate Reductases OPR1, OPR3 and YqjM: Enzyme-Based Stereocontrol, *Adv. Synth. Catal.*, **2008**, 350, 411-418.

Featured as one of the journal articles the most frequently cited among those published in 2008 or 2009 that have contributed the most to the journal's impact factor in 2010

- 4) C. Stueckler, M. Hall, H. Ehammer, E. Pointner, W. Kroutil, P. Macheroux, K. Faber. Stereo-Complementary Bioreduction of  $\alpha,\beta$ -Unsaturated Dicarboxylic Acids and Dimethyl Esters using Enoate Reductases: Enzyme- & Substrate-Based Stereocontrol, *Org. Lett.*, **2007**, 9, 5409-5411.

- 3) M. Hall, C. Stueckler, W. Kroutil, P. Macheroux, K. Faber. Asymmetric Bioreduction of Activated Alkenes Using Cloned 12-Oxophytodienoate Reductase Isoenzymes OPR-1 and OPR-3 from *Lycopersicon esculentum* (Tomato): A Striking Switch of Stereopreference, *Angew. Chem. Int. Ed.*, **2007**, 46, 3934-3937.

Highlighted in Synfacts 2007, 7, 0757

- 2) M. Hall, B. Hauer, R. Stuermer, W. Kroutil, K. Faber. Asymmetric Whole-Cell Bioreduction of an  $\alpha,\beta$ -Unsaturated Aldehyde (Citral): Competing *prim*-Alcohol Dehydrogenase and C-C Lyase Activities, *Tetrahedron: Asymmetry*, **2006**, 17, 3058-3062.

- 1) B. M. Nestl, S. M. Glueck, M. Hall, W. Kroutil, R. Stuermer, B. Hauer, K. Faber. Biocatalytic Racemization of (Hetero)Aryl-aliphatic  $\alpha$ -Hydroxycarboxylic Acids by *Lactobacillus* spp. Proceeds via an Oxidation-Reduction Sequence, *Eur. J. Org. Chem.*, **2006**, 4573-4577.

## REVIEWS

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- 9) J. H. Schrittwieser, S. Velikogne, M. Hall, W. Kroutil, Artificial Biocatalytic Linear Cascades for the Preparation of Organic Molecules, *Chem Rev.*, **2018**, 118, 270-348.

- 8) C. Winkler, K. Faber, M. Hall, Biocatalytic Reduction of Activated C=C-Bonds and Beyond: Emerging Trends, *Curr. Opin. Chem. Biol.*, **2018**, 43, 97-105.

- 7) Z. Assaf, K. Faber, M. Hall, Scope, Limitations and Classification of Lactamases, *J. Biotechnol.*, **2016**, 235, 11-23.

- 6) K. Durchschein, M. Hall, K. Faber, Unusual Reactions Mediated by FMN-Dependent Ene- and Nitro-Reductases, *Green Chem.*, **2013**, 15, 1764-1772.

- 5) C. K. Winkler, G. Tasnádi, D. Clay, M. Hall, K. Faber, Asymmetric Bioreduction of Activated Alkenes to Industrially Relevant Optically Active Compounds, *J. Biotechnol.*, **2012**, 162, 381-389.

- 4) B. T. Uebarbacher, M. Hall<sup>\*</sup>, K. Faber<sup>\*</sup>, Electrophilic and Nucleophilic Enzymatic Cascade Reactions in Biosynthesis<sup>#</sup>, *Nat. Prod. Rep.*, **2012**, 29, 337-350.

Among the top 10 accessed articles from the journal online version February 2012

- 3) M. Hall<sup>§</sup> and A. S. Bommarius<sup>§</sup>, Enantioenriched Compounds *via* Enzyme-Catalyzed Redox Reactions<sup>#</sup>, *Chem. Rev.*, **2011**, *111*, 4088-4110.
- 2) P. Bansal, M. Hall, M. J. Realff, J. H. Lee, A. S. Bommarius, Modeling Cellulase Kinetics On Lignocellulosic Substrates, *Biotechnol. Adv.*, **2009**, *27*, 833-848.
- 1) R. Stuermer, B. Hauer, M. Hall, K. Faber. Asymmetric Bioreduction of Activated C=C Bonds Using Enoate Reductases from the Old Yellow Enzyme Family, *Curr. Opinion Chem. Biol.* **2007**, *11*, 203-213.

**BOOK CHAPTERS**

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- 6) M. Hall, K. Faber, G. Tasnádi, Hydrolysis of Amides, In: *Science of Synthesis: Biocatalysis in Organic Synthesis* (Eds.: K. Faber, W.-D. Fessner, N. J. Turner), Georg Thieme Verlag, Stuttgart, **2015**, 303-327.
- 5) K. Faber and M. Hall, Addition of Hydrogen to C=C Double Bonds: Alkene Reduction. In: *Science of Synthesis: Biocatalysis in Organic Synthesis* (Eds.: K. Faber, W.-D. Fessner, N. J. Turner), Georg Thieme Verlag, Stuttgart, **2015**, 213-260.
- 4) G. Tasnádi, M. Hall, Relevant Practical Applications of Bioreduction Processes In the Synthesis of Active Pharmaceutical Ingredients. In: *Synthetic Methods for Biologically Active Molecules. Exploring the Potential of Bioreductions* (Ed.: E. Brenna), Wiley-VCH, Weinheim, **2013**, 329-374.
- 3) M. Hall, W. Kroutil, K. Faber, The Evolving Role of Biocatalysis in Asymmetric Synthesis. In: *Asymmetric Synthesis - The essentials II* (Eds.: M. Christmann and S. Bräse), Wiley-VCH, Weinheim, **2012**, 221-232.
- 2) M. Hall, C. K. Winkler, G. Tasnádi, K. Faber, Asymmetric Bioreduction of Activated Alkenes Using Ene-Reductases from the Old Yellow Enzyme Family. In: *Practical Methods for Biocatalysis and Biotransformations 2* (Eds.: J. Whittal, P. Sutton), John Wiley & Sons, Ltd, Chichester, **2012**, 87-95.
- 1) M. Hall, Y. Yanto, A. S. Bommarius, 'Old Yellow Enzyme' family and Enoate Reductases: Asymmetric Reduction of C=C Bonds and Activity on Nitro Compounds. In: *The Encyclopedia of Industrial Biotechnology: Bioprocess, Bioseparation, and Cell Technology* (Ed.: M. C. Flickinger), Wiley, Hoboken, NJ, **2010**, 2234-2247.

**EDITED BOOK**

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- 1) G. Williams and M. Hall (Eds), *Modern Biocatalysis: Advances Towards Synthetic Biological Systems*, Catalysis Series, Royal Society of Chemistry, **2018**, ISBN 978-1-78262-726-5.

**CONFERENCE PROCEEDINGS & MAGAZINES**

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- 2) A. Dennig, A. Thiessenhusen, S. Gilch, T. Haas, M. Hall, Biotechnologische Herstellung terminaler Alkene und Diene, *BioSpektrum*, **2016**, *06*, 614-616.
- 1) G. Oberdorfer, K. Gruber, C. Stückler, M. Hall and K. Faber, Computer Assisted Prediction of Complementary Stereospecificities in Enoate Reductases. In: *Flavins and Flavoproteins 2008* (Eds.: S. Frago, C. Gómez-Moreno, M. Medina), Proceedings of the Sixteenth International Symposium, Jaca, Spain, June 8-13, 2008, Prensas Universitarias de Zaragoza, Zaragoza, **2008**, 553-558.

**PATENTS**

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- 7) A. Dennig, K. Faber, M. Hall, T. Haas, T. Bülter, S. Gilch, A. Thiessenhusen, Alkene Production, EP 3061827, **2016**

- 6) A. Dennig, K. Faber, M. Hall, T. Haas, T. Bülter, S. Gilch, A. Thiessenhusen, A Method of Producing Alpha-Amino Acids, WO 2016184656, **2016**.
- 5) M. J. Realff, R. W. Smith, B. Prabuddha, A. S. Bommarius, M. Hall, J. H. Lee, Methos of Enzymatic Hydrolysis of Cellulosics Using Crystallinity Index as Reaction Rate Indicator, US 20120315674, **2012**.
- 4) P. Bansal, A. S. Bommarius, M. Hall, J. H. Lee, Improved Methods of Treating a Biomass for Enzymatic Hydrolysis, WO 2011069106, **2011**.
- 3) P. Bansal, M. Hall, J. H. Lee, A. S. Bommarius, M. J. Realff, R. W. Smith, Improved Methods of Enzymatic Hydrolysis of Biomass, WO 2011057291, **2011**.
- 2) R. Stuermer, B. Hauer, T. Friedrich, K. Faber, M. Hall, P. Macheroux, C. Stueckler, Enzymatic Reduction of  $\alpha$ - and  $\beta$ -Dehydroamino Acids, WO 2009074524, **2009**.
- 1) R. Stuermer, B. Hauer, T. Friedrich, K. Faber, M. Hall, Enzymatic Reduction of Alkene Derivatives, WO 2008058951, **2008**.

## PEER REVIEW ACTIVITIES

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### *Funding Agencies*

Agropolis Foundation

### *Journals*

ACS Catalysis; Advanced Synthesis and Catalysis; Angewandte Chemie Internatiol Edition; Applied Biochemistry and Biotechnology; Applied Catalysis A: General; Applied Microbiology and Biotechnology; Biocatalysis; Biocatalysis and Biotransformation; Bioresource Technology; Biotechnology for Biofuels; Catalysis Science & Technology; ChemBioChem; Chemical Communications; Chemistry – An Asian Journal; ChemSusChem; Enzyme and Microbial Technology; European Journal of Organic Chemistry; Frontiers in Microbiology; Green Chemistry; Journal of Biotechnology; Journal of Molecular Catalysis B: Enzymatic; Mini-Reviews in Medicinal Chemistry; Monatshefte für Chemie; New Journal of Chemistry; Organic & Biomolecular Chemistry; Process Biochemistry; RSC Advances; Tetrahedron

## PROFESSIONAL AFFILIATIONS & ACTIVITIES

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Austrian Chemical Society | GÖCH (*Gesellschaft Österreichischer Chemiker*)

German Chemical Society | GDCh (*Gesellschaft Deutscher Chemiker*)

Session Chair | Discussion Leader | Poster Selection Committee at International Conferences

Short-Listed for Tenure Track Assistant Professorship (W2) in Biomimetic Catalysis, TU Munich, Germany, **2017**

## LANGUAGES

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English (fluent) | German (fluent) | French (native)